

## CENTER FOR MEAT PROCESS VALIDATION

### 6-Day Dry-Aging as a Beef Slaughter Intervention Treatment

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**Category:** Beef slaughter

**USDA HACCP Category:** slaughter

**Processing:** Slaughter and dressing

**CCP:** intervention treatment against *E. coli* O157:H7

**Validates:** Critical Limits needed to ensure the effectiveness of 6-day dry-aging as an intervention step against *E. coli* O157:H7 on beef carcasses.

**CCP:** USDA currently requires 2 CCPs for controlling *E. coli* O157:H7 during beef slaughter. The first is the “zero tolerance” visual exam of the carcass for feces, milk, or ingesta, followed by trimming as needed. The second CCP is often an acid spray. However, many processors may want to use dry-aging as an alternative. Small and very small beef slaughter plants often hold the meat in a cooler (with no spraying) for several days before cutting. Earlier studies suggested that dry-aging may be an effective intervention treatment against *E. coli* O157:H7, but further validation work was needed. Critical Limits for a dry-aging step would be related to temperature, time, and either % relative humidity or air movement.

**Study Design:** During January – September, 2006, we collected data from nine Wisconsin beef slaughter plants that use a 6-day dry-aging beef carcass intervention treatment. From each plant, we obtained carcass sponge samples before and after (the 6<sup>th</sup> day after slaughter) the dry-aging beef carcass intervention treatment. Overall, 86 carcasses were tested for generic *E. coli*, coliforms, and Enterobacteriaceae. These types of bacteria are called “indicator” bacteria because their presence usually indicates fecal contamination. Until further notice, you can regard these indicator groups as “stand ins” for pathogenic *E. coli* O157:H7.

**Results and Discussion:** Generic *E. coli*, coliforms, and Enterobacteriaceae were detected on 69, 84, and 93%, respectively, of carcasses sampled before dry-aging. But, generic *E. coli*, coliforms, and Enterobacteriaceae were only detected on 8, 17, and 37%, respectively, of carcasses sampled after dry-aging.

In terms of the average number of bacteria present, generic *E. coli* were reduced from 3.7 to 0.17 CFU per cm<sup>2</sup>, coliforms were reduced from 5.8 to 0.23 CFU per cm<sup>2</sup>, and Enterobacteriaceae fell from 7.3 to 4.9 CFU per cm<sup>2</sup>.

**Validated Critical Limits** based on study results:

1. The carcass cooler temperature must reach 41°F or colder by 8:00 a.m. on the morning after the slaughter day.
2. The carcass cooler temperature must be maintained at 41°F or colder for the 6-day dry-aging period.
3. The carcass cooler must be equipped with a fan to create air movement.
4. Beef carcasses must be dry-aged until the 6<sup>th</sup> day after slaughter. For example, if you slaughter on Tuesday, you cannot further process the carcasses until next Monday.

**A full copy of this research report is available on request.**

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For more information on this project or the work of the University of Wisconsin Center for Meat Process Validation contact: Steve Ingham, Extension Food Safety Specialist (608) 265-4801, [scingham@wisc.edu](mailto:scingham@wisc.edu)

*The University of Wisconsin-Madison Center for Meat Process Validation provides science-based HACCP support to small meat processors in meeting state and federal mandates for safe food processing and handling.*